



## APPRAISAL BULLETIN

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*Real Estate Economists, Appraisers and Counselors*

### CONSTRUCTION COSTS ON A SMALL OFFICE BUILDING

Total Cost: \$132,500  
(\$ 1.09 per cu. ft.  
12.40 per sq. ft.)

Content:  
121,700 cubic feet  
10,668 square feet



THE inexorable march of residential development away from the central city to the "open air" of the suburbs is now being followed by a similar movement in commercial development. One of the main disadvantages to living "in the country" is the tedious trip to and from the central city for the day's business. Many individual operators, manufacturers' representatives, etc., and business organizations whose activities do not require the facilities afforded by the downtown district are circumventing this problem by moving the offices closer to home.

In view of this trend, we thought it worthwhile to provide our subscribers with detailed cost information on a well-built small office building. As the picture indicates, it is a three-story building of modern architectural design, using contemporary "shadow-box" type treatment on the front and rear walls. The window

areas are limited to the front and rear walls. The first floor of this building is partially below ground level, although the entire building is finished except for a small boiler room 15' x 16'. The building is approximately 55' x 65', containing a ground area of 3,556 square feet.

The building has 13" masonry walls with all exterior work of face brick, and utilizes steel bar joist construction. Each floor has two lavatories, each with tile floor and wainscot. Walls are 3-coat plaster with inside partitions plaster over metal lath hung on truss steel partition studs, providing a 2" wall. Floors are asphalt tile over concrete and the ceilings are acoustical tile. The second and third floors are 2½" concrete slabs poured over corruforn. The roof is composition tar and gravel over gypsum slab which is, in turn, over Fiberglas insulation formboard. The building is completely air-conditioned and uses a forced warm air heating system. Some hot water radiation is used to offset heat loss through glass areas.

#### BUILDING COST DATA

This building as constructed in a St. Louis suburb has an area of 10,668 square feet and a content of 121,700 cubic feet. The total cost, excluding architect's fees and financing charges but including a reasonable contractor's profit, is \$132,500, or \$1.09 per cubic foot. It is estimated that the air-conditioning system added \$5,000 to the cost of the building and, therefore, the cube cost factor without air-conditioning would be \$1.05. The cost works out to be \$12.40 per square foot of area air-conditioned, or \$11.90 per square foot without air-conditioning. The building is estimated to have 8,800 square feet of rentable area, and would have a cost of \$15.10 per square foot of rentable area air-conditioned, or \$14.50 per square foot of rentable area without air-conditioning.

We realize that many of our subscribers may be confronted with variations on this type of structure. Consequently, we have broken the cost down as follows. Of the total cost of \$132,500, \$45,400 went for the mechanical items, electrical, plumbing, heating and air-conditioning, \$22,100 went for interior finish, and the building shell without interior finish amounted to \$65,000. To those interested in unit figures, these amounts would be the equivalent of 37¢, 18¢, and 54¢ per cubic foot, respectively. The building as shown contains 22 plumbing fixtures. Variations in this number should be added or deducted in the amount of \$400 per fixture. The cost of the tile in the lavatories is \$300 for each lavatory. Asphalt tile work amounted to 22¢ per square foot, while the acoustical tile ceiling cost 40¢ a square foot including the cost of the mechanical suspension system. Partitions of the type described above are to be added or subtracted at \$9.50 a lineal foot. Doors added or subtracted should be at a unit price of \$80 each. These cost figures include all materials in place and finished where necessary.

## DESCRIPTIVE SPECIFICATIONS

### GENERAL CONDITIONS

all materials shall be sound, new and of good quality and all work shall be done in a skillful and workmanlike manner.

### EXCAVATION AND PREPARATION OF SITE

Unless otherwise specified herein, the contractor shall provide and pay for all materials, labor, water, tools, equipment, permits, light and power necessary for the completion of this structure. Unless otherwise specified,

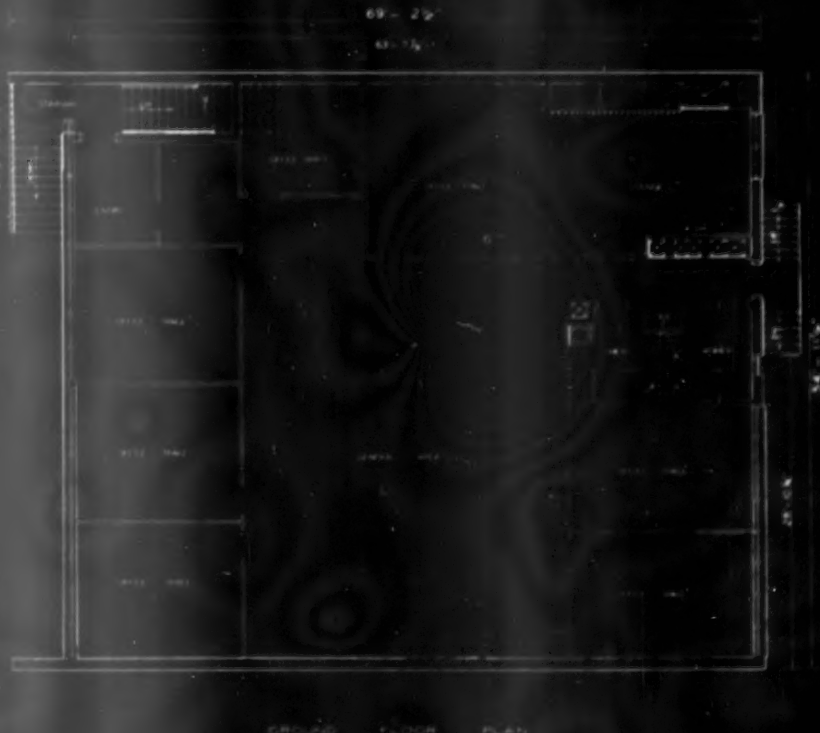
Contractor shall clear and remove all grass, brush, shrubs, trees, and loose stones on area to be stripped of topsoil and elsewhere as indicated. Topsoil is to be removed to its full depth on areas that require change of contours. All exterior grading shall be done with topsoil to a minimum of 12".

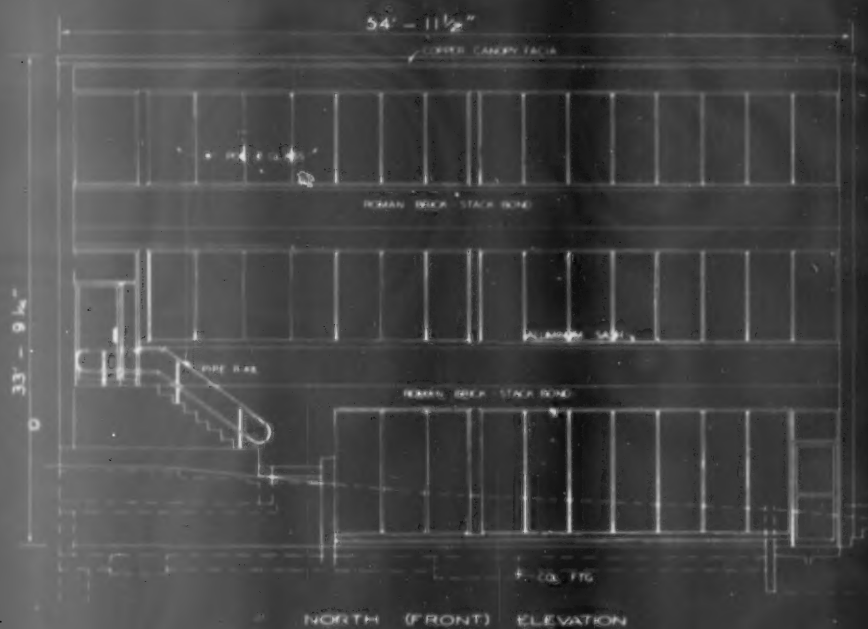
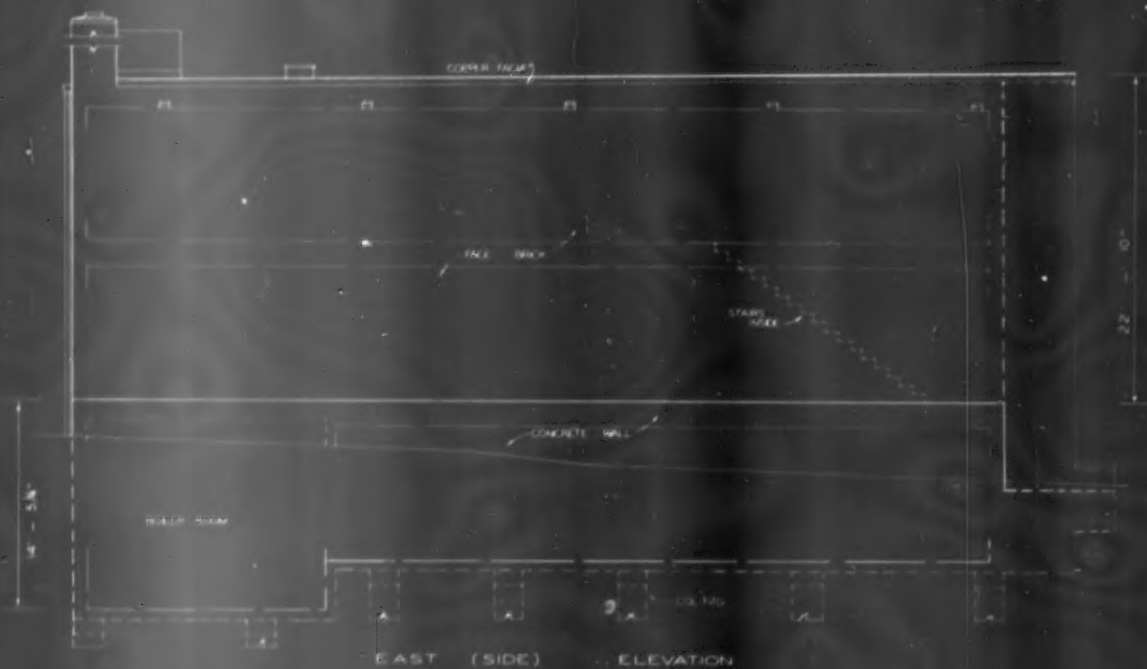
### CONCRETE FOOTINGS, FOUNDATION AND FLOOR

The footings for exterior and interior bearing walls, piers, columns, chimneys, retaining walls, and all exterior foundation walls and retaining walls as shown shall be 2500# concrete. Basement floor is to be stone concrete slab, 4" thick, the mixture to be 1 part Portland cement, 2 parts stone, gravel or other suitable clean coarse aggregate to produce when tested 2500# concrete, reinforced with a 6# welded wire mesh 6" on center each way. There shall be a crushed rock fill rolled to 4" thickness under basement floor slab. Against foundation floorings and walls for drainage (gravel or stone only) fill shall be 18" deep and 18" wide at the bottom. Slabs shall be poured in one operation, expansion joints to be placed in areas over 30' in longest dimension. The concrete for all structural slabs to be of 1:2½:3½ mix 3000# test concrete with minimum of 6 sacks of cement per yard. All reinforcing steel shall be rail steel in accord with the standard specifications of the A. S. T. M. A-305-49, latest edition. This contractor to damp-proof by brush applied damp-proofing to all exterior basement concrete walls below grade where excavated and occupied spaces occur on the interior. Vapor barrier of rigid asphalt board approximately 1/8" thick to be installed under basement floor slab to outside walls. Also install 2" Fiberglas AEF water-proof insulation board under concrete basement floor slab on outside walls, 2' wide, and at exterior edges of floor slab.

### BRICKWORK AND MASONRY ITEMS

Exterior walls are to be face brick known as buff matt brick, backed up with load-bearing hollow clay tile. (Roman brick to be used on front wall only.) Mortar for all face brick shall be colored to match brick and shall be non-staining cement mortar ½ part nonstaining cement, ½ part of hydrated lime, and not more than 3 parts of sand, and tempered with not over 1/5 with hydrated lime. Exterior face brickwork shall be running bond, a through header at





every sixth course, with weathered joints  $\frac{1}{2}$ " thick. On exterior all joints between door frames and masonry and steel lintel window frames and masonry shall be cleaned out and caulked. All sills to be of Egyptian or Pink Tennessee marble at least  $\frac{7}{8}$ " thick, washroom thresholds to be of Carthage Gray marble of the same minimum thickness.

#### STRUCTURAL STEEL

Structural steelwork shall be 6 x 6 H columns supporting 10" I beams as indicated on the structural steel plans. Ceiling joists are to be 16" steel bar joists set on 48" centers on third floor ceiling and 24" on first and second floor ceilings. Supporting members are 8" 48# H columns and 14" 74# I beams. All steel used shall conform to the standard specifications of the A. S. T. M. 47, latest edition. Also, standard specifications for steel joists of the Steel Joist Institute with revisions to date. Joists will bear at least 6" on masonry concrete and at least  $2\frac{1}{2}$ " on steel. First joist in any run to be placed not more than 4" clear of end wall. Every third joist to be anchored to masonry, with all bearings to be bedded with cement mortar. Bulkheads below glass openings on north and west walls as well as parapet walls to be Stran-Steel studs. All steel shall be painted 1 shop coat and 1 field coat of specified metal protection. The two ceiling slabs to be poured over corrugum also to be supplied under this contract.

#### PLASTERING AND ACOUSTICAL

All plaster to be 3-coat and in accordance with the standard specifications of the A. S. T. M. applicable. Exterior walls will be plaster over the hollow tile on the second and third floors and over  $\frac{3}{4}$ " furring channels and metal lath on the first floor. All interior partitions to be plaster over truss steel hollow partition studs with metal lath.

All ceilings, except in janitor's closet and boiler room, to be covered by acoustical material of textured Fiberglas  $\frac{3}{4}$ " thickness having a noise reduction coefficient of at least 80%, with a mechanical suspended application. Acoustical tile must be guaranteed against warping, buckling, expansion or contraction under widely varying conditions of humidity and temperature. Acoustical tile units shall be beveled 12" x 24" beveled and scored to 12" x 12" squares.

#### ROOF AND ROOFING

Roof to be built up 20-year bond tar and gravel roof on 2" gypsum slab on  $1\frac{1}{2}$ " Fiberglas insulation formboard. Gypsum slab to be a standard USG (Sheetrock-Pyrofill) 2" thick gypsum concrete roof deck complete with cants, curbs, drainage fills, etc., as indicated, to be reinforced with mesh of #12 gauge wires.

#### FLASHING AND SHEET METAL WORK

Flashing shall be installed all around all projecting ducts, vents, curbs, etc. Also provide and install copper gutters and downspouts shown on drawings complete with heads, leaders and hangers 4' 0" on center. Also provide and install two 16" galvanized iron gravity roof ventilators. All sheet metal work shall be 16-ounce roofing temper copper except where otherwise specified.

#### WINDOW FRAMES AND SASH

All windows to be aluminum with storm sash and interchangeable screens to be furnished and installed on all awning windows. Frame members shall have a minimum depth of 1-7/8". Head and sill sections of the vents shall have a minimum depth of 1-1/4". All windows shall be assembled in a secure and workmanlike manner to insure neat weathertight construction. Windows shall be completely weatherstripped at all outside contacts with Koroseal or elastomeric vinyl or equal. All exterior sash to be glazed with  $\frac{1}{4}$ " polished plate glass except where noted.

#### INTERIOR MILLWORK AND FINISH

Work shall be assembled at the mill insofar as practical and delivered ready for erection. Molding shall be true to detail, cleanly cut and sharp. All exposed surfaces shall be machine-sanded ready for finish. Exposed molds and surfaces shall be hand-sanded ready for finish. Doors to be 1-3/8" thick solid core flush birch both sides. Suitable matching trim shall be used around all wood doors as detailed on the plan. Fireproof doors shall be "Weldwood" fireproof doors set in metal Richmond fireproof frames. Kitchen cabinets for lounge to be wood with sliding doors grade 'A' poplar. Counter top and splash backs of linen color formica. Other items of built-in equipment to be furnished and installed as shown on drawings.

#### FINISHED FLOORING

All floors except boiler room and wash rooms shall be covered by asphalt tile flooring. Tile shall be  $\frac{1}{8}$ " thick and of standard size as selected. Base to be 4" cove rubber base with premolded rounded top. All cracks, expansion joints, etc., shall be filled with spackle or joint filler before the tile is laid.

#### PAINTING

\$1,800 allowance to include all interior painting and staining; also painting soffits on exterior. Materials and application to be of the highest quality.

#### FINISHED HARDWARE

\$1,500 allowance.

#### TILE WORK

Wash rooms shall have tile floors and wainscots; also wainscot in water cooler niches. Wall tile to be mat glazed 4" x 4" select grade and shall contain no kulls, kiln run, or warped tiles. Setting mortar of 1 part Portland cement, 4 parts clean sharp sand, 1 part high calcium hydrated lime putty not less than  $\frac{1}{4}$ " or more than  $\frac{3}{4}$ " thick shall be applied over scratch coat not less than 12 hrs. or more than 48 hrs. after scratch coat has been applied.  $\frac{1}{4}$ " thick porcelain type floor tile will be placed on a  $\frac{3}{4}$ " mortar bed according to manufacturer's directions.



## PLUMBING

Soil, Waste and Vent Lines. Erect soil, waste and vent stacks of sizes as shown. Branch soil, waste and vent connections shall be run to the soil stack, waste stack, building drain or vent stacks as shown or required, with hot coated standard weight bell and spigot cast iron soil pipe and fittings. Horizontal drainage piping shall be run in practical alignment, and shall be supported at intervals not exceeding 5 feet. Stacks shall be supported at their bases and shall be rigidly secured. Piping shall be installed without undue stresses or strains and provision made for expansion, contraction and structural settlement. Joints shall be made with a picked oakum gasket, well packed and then filled with molten lead, and caulked solid; not less than 16 ounces of lead shall be used for each inch of pipe diameter. Joints of all screwed piping shall be standard manufactured graphite joint compound. Threads shall be full cut; ends of pipe shall be reamed out and threads shall conform to Federal Spec. G. G. G. - F-351.

Water Piping. Cold water pipe and fittings shall be standard weight copper bearing steel, galvanized, and shall conform to the A. S. T. M. standard. Hot water pipe shall be standard hard copper type K with streamlined cast bronze fittings. All pipes shall be accurately cut to measurements established at the building, and shall be worked into place without springing or forcing. Allowance shall be made throughout for expansion and contraction of piping, and unions shall be provided where required for disconnecting. Water supply to building to be 2" pipe minimum.

Plumbing Fixtures. All fixtures shall be installed complete. Contractor shall furnish and set all grounds, supports, inserts, etc., for fixtures. Air chambers of full pipe size and 12" long shall be provided at each fixture. Fixtures shall be furnished and installed in the locations shown with such variations as may be necessary due to construction. Furnish and install soap dispensers as shown on plans. Fixtures shall include 9 water closets, 3 urinals, 6 lavatories, 3 utility sinks, Standard Sanitary Manufacturing Co. or equal. A Dwyer-Murphy electric cabranette sink unit with disposal shall be included (in lounge). The cost of all fixtures not to exceed \$2,000. This contractor also to provide and install a 45-gallon automatic gas hot water storage tank, Ruud or equal.

Testing. The entire soil, waste, drain and vent piping system shall be tested by filling with water to top of vertical section of pipe, and shall so remain for one-half hour without leaking. Water piping shall be tested and found tight against 100 pounds per square inch water pressure, applied to the system.

## ELECTRICAL

The contractor shall furnish and install all electrical conduits, boxes, panelboards, sub-meters, cables, wires, switches (local and safety), receptacles, plates, and lighting fixtures. The electrical contractor shall install all electrical work for heating and air-conditioning system as directed by the heating and air-conditioning contractor. The electrical installation shall be made using galvanized or sherardized, rigid heavy wall, thin wall, or flexible conduits, concealed in walls, columns, ceilings, and furred spaces. Panelboards shall be mounted as shown. The contractor shall furnish and install a system of empty conduits with outlet boxes and cabinets where shown for a system of telephones to be furnished and installed by the Telephone Company. The electrical installation shall be made by skilled and qualified electricians under proper and adequate supervision. The work shall be executed in a workmanlike manner and present a neat and mechanical appearance when completed. All equipment and materials furnished shall be complete and new; shall be as approved by the Underwriters Laboratories or local governing authorities; and shall be installed to operate in the manner intended.

The electrical contractor shall furnish and install all fluorescent and incandescent electrical lighting fixtures complete and ready for service in accordance with the drawings. For all the lighting fixtures to complete the lighting, an allowance of \$4,200 is made. The above figure is the net wholesale cost to the electrical contractor and does not include overhead or profit for this contractor, as the overhead and profit shall be included in the base electrical quotation. All fixtures will be installed and hung by the electrical contractor and the cost of these fixtures is to be included in his bid. Furnish and install lamp bulbs or fluorescent tubes, and porcelain receptacles, of size indicated on the plans for all fixtures and/or lamp holders.

## HEATING AND AIR-CONDITIONING

The heating and air-conditioning system is to be of the forced air zone type with 7 zones of control. The air-handling unit to have heating and cooling coils with moderating thermostat for each zone. Mixing-type dampers will provide automatically adjusted air temperature and flow. A 30 h. p. compressor with matching evaporative condenser shall be provided for air-conditioning, the condenser to be placed on the roof. Supplementary hot water radiation shall be used to offset loss of heat resulting from window areas. There is to be a hot water oil-fired boiler with a minimum capacity of 409,000 B. T. U., the boiler to have 2 hot water circulating pumps, one for direct radiation and one for the heating coil in the air-conditioning unit. Operation of these pumps shall be controlled by manual summer-winter switch. Contract to include a 1,000-gallon underground oil storage tank. All duct work to be galvanized. The metal used and the method of installation to comply with specifications set forth in the A. S. H. & A. E. Guide.